Volunteer Lake Assessment Program Individual Lake Reports

NORTHWOOD LAKE, NORTHWOOD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	15,384	**Max. Depth (m):**	6.3	**Flushing Rate (yr^{1})**	3.9
Surface Area (Ac.):	687	**Mean Depth (m):**	3.1	**P Retention Coef:**	0.53
Shore Length (m):	13,000	**Volume (m^{3}):**	8,488,000	**Elevation (ft):**	514

TROPHIC CLASSIFICATION

Year	Trophic class
2000	MESOTROPHIC
2000	MESOTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

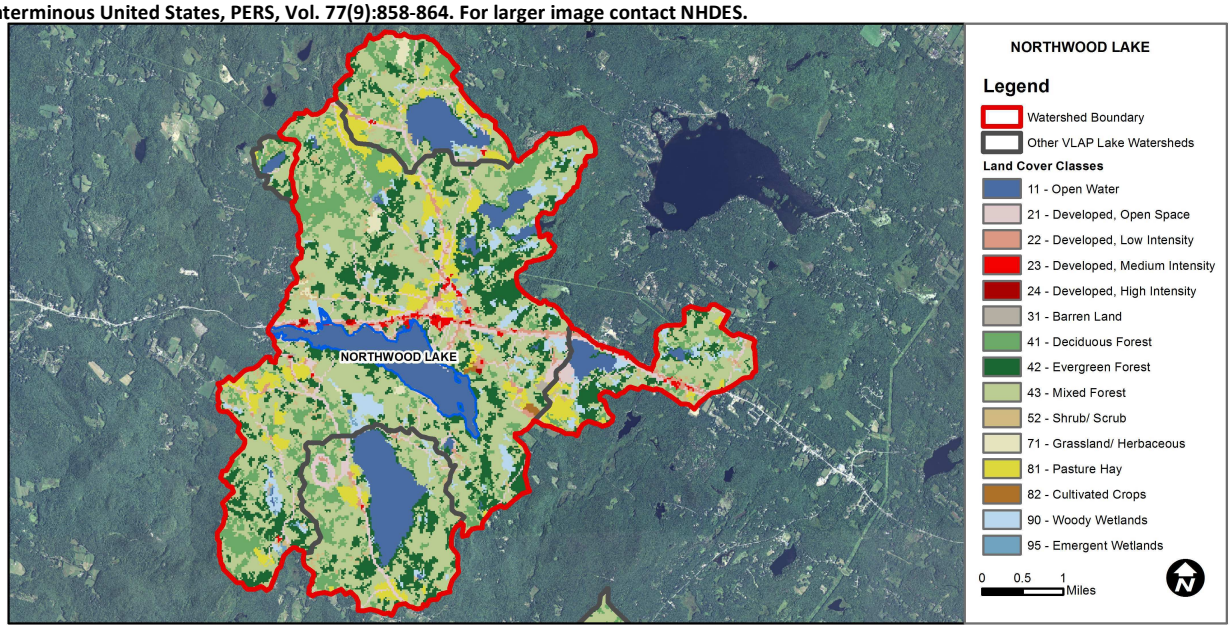
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	<5 samples and median is > threshold. More data needed.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

NORTHWOOD LAKE - LYNN GROVE ASSOCIATION BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
NORTHWOOD LAKE - CAMP WAH-TUT-CA BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
NORTHWOOD LAKE - TOWN BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

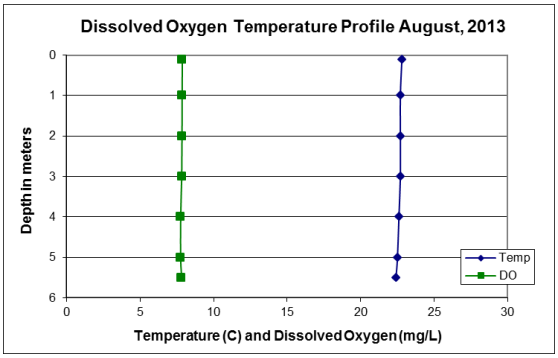


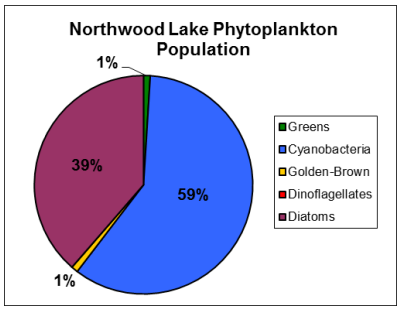
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.4	Barren Land	0.13	Grassland/Herbaceous	0.57
Developed-Open Space	5.57	Deciduous Forest	11.28	Pasture Hay	5.87
Developed-Low Intensity	1.69	Evergreen Forest	15.9	Cultivated Crops	0.13
Developed-Medium Intensity	0.71	Mixed Forest	39.73	Woody Wetlands	4.04
Developed-High Intensity	0.09	Shrub-Scrub	2.48	Emergent Wetlands	0.29

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
NORTHWOOD LAKE, NORTHWOOD, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels decreased as the summer progressed however average levels increased slightly from 2012. Historical trend analysis indicates stable chlorophyll with low variability between years.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride levels were greater than the state median at all stations except Lower WTC Inlet. Conductivity and chloride were particularly elevated in August at Horse Farm, Rte. 4 E Inlet and Flat Meadows Brook following a significant storm event. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years.
- **E. COLI:** E. coli levels were well below the state standard for surface waters at all stations this summer. This is a positive sign as significant storm events occurred prior to each sampling event.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were relatively low throughout the summer and approximately equal to the state median. Historical trend analysis indicates stable epilimnetic phosphorus with low variability between years. Phosphorus at Old Dump Rd., Pleasant Pd. Inlet and the Town Beach were low throughout the summer. Phosphorus was low to average at the Horse Farm and Flat Meadows Bk. in June and July, but elevated in August, and turbidity was also elevated. Phosphorus was average in Rte. 4 E and W Inlets, and Bridge Inlet. Phosphorus levels were elevated throughout the summer at Lower WTC Inlet potentially due to wetland flushing.
- **TRANSPARENCY:** Transparency was lower in 2013 potentially due to the increased algal growth and suspended sediments from stormwater runoff. Transparency was better when measured with the viewscope vs. without. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Deep spot and the majority of tributary turbidities were within average ranges for the stations. Rt. 107 Inlet turbidity was slightly elevated in June and Horse Farm and Flat Meadows Bk. turbidity was elevated in August. Field data noted high flow at Rt. 107 Inlet in June following significant rainfall and lower flows at the Horse Farm and Flat Meadows Bk. in August.
- **PH:** pH levels were generally less than desirable range 6.5 – 8.0 units at all stations except Horse Farm, Pleasant Pd. Inlet, Town Beach, Outlet, and Old Dump Rd.
- **RECOMMENDED ACTIONS:** Significant storm events occurred prior to each sampling event and overall water quality remained average for the lake. Phosphorus levels at Lower WTC Inlet were elevated on each sampling event and bracket sampling or a tributary walk is recommended to identify if the phosphorus is naturally occurring. Water quality at the Horse Farm was indicative of potential fertilizer runoff as conductivity, pH, phosphorus, and turbidity were all elevated beyond normal ranges. Cyanobacteria were noted in the lake in August, however were not at dangerous levels. Notify DES if you notice cyanobacteria scums or blooms. Keep up the great work!





NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2013 Average Water Quality Data for NORTHWOOD LAKE

Station Name	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	VS		
Bridge Inlet			11	58.4	20	22			0.98	6.37
Flat Meadows Brook				60.0	87	28			2.77	6.07
Horse Farm			17	168.6	87	21			2.92	6.90
Lower WTC Inlet			3	40.1	53	59			1.63	5.42
Old Dump Rd			13	74.4	20	11			1.59	6.86
Outlet			12	70.8					1.37	6.71
Pleasant Pd Inlet			10	64.1	60	14			0.98	6.68
Rte 107 Inlet			15	78.4					1.40	5.91
Rte 4 E Inlet			18	99.0	95	20			1.54	6.52
Rte 4 W Inlet				60.4	80	21			1.09	5.68
Epilimnion	5.13	5.24	11	71.4		11	2.53	3.30	1.16	6.55
Hypolimnion				72.7		12			1.29	6.49
Town Beach				72.0	10	15			1.76	6.69

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
Conductivity	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.